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ABSTRACT

The Multimedia Approach to Pregnancy Prevention (MAPP) is an expert intelligence multimedia program administered in outpatient and inpatient clinics in the University of Miami/Jackson Children's Hospital (Florida). The target population for the MAPP program is youths aged 9-14 years, diagnosed with chronic illnesses (asthma, diabetes, and sickle cell disease). Program sessions take place in a clinic setting, using a portable computer. Three sessions have been developed on chronic illness and its effects on sexual development. The major aim of MAPP is to strengthen intentions to postpone sexual initiation and prevent pregnancy. Evaluation takes place by examining differences between a treatment and control group on pre-post tests at baseline, 1, 3, and 6 months. Measurement instruments include a pre-post questionnaire, computer log, module development logs, and clinic checklist. Outcome evaluation includes comparison of knowledge and attitude change toward sexual abstinence and changes in behavioral intention to choose abstinence in both the intervention and control group. Preliminary reports indicate acceptance of the program by subjects, parents, and clinic personnel. Contains 13 references. (Author/MES)

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MAPP: A Multimedia Instructional Program for Youths with Chronic Illness

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Abstract:

The Multimedia Approach to Pregnancy Prevention (MAPP) is an expert intelligence multimedia program administered in outpatient and inpatient clinics in the University of Miami/Jackson Children's Hospital in Miami, Florida. The target population for the MAPP program is youths aged 9-14 years, diagnosed with chronic illnesses (asthma, diabetes, and sickle cell disease). Program sessions take place in a clinic setting, using a portable computer. Three sessions are developed on chronic illness and it's affects on sexual development. The major aim of MAPP is to strengthen intentions to postpone sexual initiation and prevent pregnancy. Evaluation takes place by examining differences between a treatment and control group on pre-post tests at baseline, 1, 3 and 6 months.

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Introduction:

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Studies of adolescents show that chronically ill/disabled teens are at least as sexually active as their peers, tend to have an earlier age of sexual debut, are more likely to have been sexually abused, have poor knowledge of sexuality, low self-esteem, low social integration, and have over protective families (Carrera, 1992). There is very little data on pregnancy complications and prevention programs targeted at chronically ill youth. The poor health outcomes associated with "normal" teen pregnancies such as inadequate weight gain during pregnancy, labor and delivery complications, low birth weight infants, and inadequate prenatal care are well known. These risks are compounded for both the mother and the infant when pregnant adolescents have a chronic illness (LaGreca, 1990).

Parent participation in programs for education about healthy sexuality and pregnancy prevention is an important component for inclusion in pregnancy prevention for this population. When girls aged 12-14 years were involved in pregnancy prevention programs with a parent-daughter workshop component, it has been shown that they were less likely to initiate sexual intercourse than girls involved in assertiveness training/resisting peer influence program components (Postrado & Nicholson, 1992). By conducting education during regularly scheduled clinic visits, the likelihood that parents will be in attendance is increased. There is also a need to include males in health programs to promote sexual abstinence, and the multimedia, computerized approach may be a way to engage young males in pregnancy prevention education.

For younger aged youths (9-14) years, issues of confidentiality and disclosure of feelings about sensitive health issues are difficult and often guarded. Youths in the US tend to be shy and self-conscious in talking to their peers or partners about sexual issues. Physicians and teachers are not always available to take the time that is necessary to conduct discussions about health behaviors, medications, and illness effects that may impact sexual development and pregnancy outcomes. Thus, interventions are needed that protect privacy and confidentiality, and provide opportunities for learning and follow-up discussions with professionals and parents for youths with chronic illness.

Personal computers are being used more frequently to deliver health information, to develop positive health behaviors, and to conduct health risk inventories and surveys (Skinner, 1993; Noell, 1997). Multimedia programs now have the capability to use graphics, animation, sound and video clips to enhance their appeal and to provide feedback to young users.

In the Adolescent Medicine inpatient unit at University of Miami/Jackson Children's Hospital, computers are already a popular choice for games and entertainment. In the Special Adolescent Clinic for HIV+ teens, the computers provide information to HIV+ youths about their illness and are a way of collecting sensitive interview information in a confidential manner.

There are unique characteristics of multimedia-based expert intelligent computerized programs that are important for pregnancy prevention among chronically ill youth. It has been demonstrated that youths prefer computers to human interviewing or advice for sensitive topics (Slack, 1971; Paperny, 1986). Using a Teen Health Advisor software program (Paperny, 1997), over 4200 adolescents reported that they preferred the computer to personal interviews about health and sexual practices (88% vs. 6%). Sixty five percent of the youths described the computer in positive terms, such as, educational, truthful and fun. Eighty-seven percent responded that they would use the computer again. In an evaluation of four software modules developed for British youth on sexual topics, the youths, particularly males, found that using computers in a game format was an enjoyable and informative way to convey information about sensitive sexual issues (Turner, 1997).

Computer games concerning asthma have been shown to affect health behaviors positively among children (Rubin, 1986), and computer assisted instruction has been shown to enhance interactive skills with regard

to sexuality without sensitive personal exposure present in class or group sessions (Kann, 1987). Paperny (1989) developed two computer games, "The Baby Game", and "Romance", for pregnancy prevention and placed them in six pediatric clinics for use by teenage patients. The clinics showed a 15% decrease in positive pregnancy tests for adolescents during the first year of use of the computer-assisted instruction, which was attributed to the computer games. Feedback from parents and male patients was positive.

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Goals & Objectives

The primary goal of MAPP is to strengthen the intention to postpone sexual initiation (and prevent pregnancy) using a multimedia based expert intelligence approach for youths 9-14 years with chronic disease.

The general objectives of the program are:

1. To deliver an abstinence based curriculum approach to pregnancy prevention for youths who attend an adolescent medicine clinic that is specific to their disease diagnosis;
2. To compare knowledge, attitudes and intentions about sexual abstinence in a group of youth who receive the MAPP approach versus those who receive standard care (SC) of print materials and physician advice only in clinic visits;
3. To develop and deliver three modules using a multimedia expert based intelligence approach with strategies that are fun, educational and targeted to youths with a specific chronic disease diagnosis; and
4. To evaluate the results of the MAPP program in order to determine its effectiveness in changing knowledge, attitudes and behavioral intentions, and the training and demands on personnel time that are needed to install MAPP into the clinic setting.

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Program Design

Approximately 150 youths diagnosed with asthma, diabetes, and sickle cell disease who attend inpatient and outpatient adolescent clinics at University of Miami/Jackson Children's Hospital in Miami, Florida are being recruited into the MAPP program. Youths who are determined to meet the eligibility criteria and who have parental consent are randomly assigned to either a MAPP program group (N=100) or the Standard Care control group (N=50). Changes that occur pre-post in knowledge, attitudes about abstinence, and changes in behavioral intention are measured between the two groups.

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Methods & Materials

Subjects. Eligibility criteria for enrollment into the program include age (9-14 years); diagnosis with a chronic illness of asthma, diabetes, or sickle cell for at least 6 months; the ability to read and understand English; and, a willingness to attend at least two (or more) consecutive monthly scheduled appointments.

Informed Consent. Consent for entering this program takes place through written consent forms for both youths and their parents. The program has been submitted and approved by the Institutional Review Board

for the University and the Hospital.

Procedures. Youths are recruited into the MAPP Project based on patient appointment schedules for each of the clinics. While waiting for their appointment with the clinician, youths are actively recruited to participate in the project. Once eligibility criteria are established, youths are given a randomization packet to complete, which includes the baseline questionnaire and study consent forms. The participant opens an envelope which contains a randomization card, a user ID and password number (if appropriate to their group assignment). Only the user ID numbers are used on the information forms for tracking and follow-up purposes. Using the ID number and password allows the youth to log onto the computer and log files are kept of each participant and record the date and length of time they were logged onto the computer, and responses to queries that take place throughout the program modules. There are 3 program modules each about 20 minutes in length. At the end of Module 1 (visit 1) and Module 3 (visit 2), youths are instructed to take a form to their clinician (doctor or nurse). Clinic staff will complete the forms and give them to the interventionist at the end of the clinic.

The project personnel are in the clinic to facilitate utilization of the portable laptop computers by the intervention group youth, set up racks with health information, and to complete the randomization packets.

Materials. The 3 MAPP modules were developed by the study investigators and staff, which include pediatric adolescent medicine specialists, health educators, computer scientists, and adolescent psychologists. The message concepts of the 3 modules are based on the Managing Pressures Before Marriage - Postponing Sexual Involvement (PSI) program (Howard, 1996) and the March of Dimes-funded, "My Health is Worth It" project. Scripts for the modules were reviewed by a Youth Advisory Group, MAPP Study Investigators, and the consultants from the Office of Adolescent Pregnancy Prevention, OPA, DHHS.

The three software modules developed for the MAPP program are graphic, animated, and include use of audio and video clips. Module 1 consists of one module with three separate sub-modules, each one being disease specific. Module 2 is concerned with making decisions and dealing with peer pressure about initiating sex. In Module 3, youths learn to understand relationships and learn to handle peer pressure and sex in those relationships. At the end of Module 3, the project staff asks youths if they wish to participate in ongoing group programs at the clinic.

Multimedia Based Expert Intelligence Development. The steps to the development of the multimedia program include:

1. Documentation and Development of Ideas (DADI):

   Development of lesson content outlines; review of message concepts; incorporation of instructional & behavioral objectives; scientific group review (accuracy & age appropriateness); youth advisory group review; and, outline role plays, games & and quizzes.
2. Evaluation of DADI:

   Two focus groups of youth review scripts; determination of information and decision points; project staff determine scientific accuracy; and, computer specialist advises on technical aspects and feasibility.
3. Development of Story Lines:

   Development of logic flow charts including the list of situations, activities and decision points
4. Development of Handout Materials (DHMs):

Design, flowcharts and outlines of handout materials reviewed by key program and clinical staff for content knowledge, accuracy and modification.

5. Program Specifications and Design (PSD):

   Program development then takes place by the computer specialists and includes instructional design using computer-aided instructional methods and word processing.
6. Development of Multimedia Components (DMCs):

   Designs, scripts and handout outlines delivered to the computer specialists who work with the animator/artist to develop the graphic art, animations, photo retouches and computer designs.
7. Revision of DHM and PSD:

   Editing occurs of both the print handouts and computer modules to check reading levels, text simplification and to complete a grammar and punctuation check. Print handouts to parents are translated to Spanish.
8. Integration of DMCs:

   Artist and programmers collaborate to create animations, artistic drawings and integrate sound.
9. Review of Integrated DMCs:

   Audio and video text are modified after a review by the Youth Advisory Group members and Program staff, eligible youths who attend the clinic pilot test materials, which are not age or disease-specific at this point.
10. Final Clinical Setups:

    Installation of hardware and software. Set up a rack for handout print materials and developing procedures for maintenance and quality assurance checks of programs and equipment.

Measurement Instruments.

Pre-Post Questionnaire: A pencil-paper survey with 17 questions has been developed for the MAPP project from the Medical Knowledge Questionnaire, the Self-Efficacy for Abstinence/Contraception Questionnaire, and the Youth Risk Behavior Survey (for middle school youth). The questions were modified by study investigators to be age and language appropriate.

Computer Log: Each youth in the intervention group will have a computer record on which data is entered each time they login. Data collected will determine the number and length of sessions they complete; the choices and responses made to computer program queries; scores on quizzes in information activities; changes in attitudes and communications that take place between sessions with clinical support staff and parents; and, a rating on the evaluation of the computer program for its ease, enjoyment and suggestions for future modules.

Module Development Logs: Evaluation of the elements of module development are tracked during this process, by collecting variables, such as, amount of video, audio and animation, module themes, software programming, and importing multimedia segments.

Clinic Checklist. A checklist with 5 questions is handed to the clinician who sees the patient for the medical visit. The clinician takes the checklist and asks general questions regarding the material in the modules, how this material makes them feel and if they wish to speak with anyone.

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Evaluation

Process evaluation includes collecting measures on variables related to program timelines, technology development schedules, materials review, and feedback from committee members, project staff and consultants. All phases of the program are monitored to determine that the project meets timelines and completes the program's goals and objectives and workplan. Process measures include:

1. Advisory and focus group assessments
2. Technology development and implementation monitoring forms
3. Handout materials (brochures, flyers) counts
4. Computer based feedback
5. Clinician feedback forms

Outcome evaluation includes comparison of knowledge and attitude change toward sexual abstinence and changes in behavioral intention to choose abstinence in both the intervention and the control group (as measured by the Pre-post questionnaire).

The data analysis plan includes analysis of pre-post differences by chi-square and t-tests to test for differences between the intervention and control group on outcome variables selected (knowledge, attitude, and intentions). Descriptive statistics are used to summarize process variables and to determine if differences in participation and results occur due to age, ethnicity or chronic illness diagnosis.

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Results

Preliminary results of the MAPP program show that 45 adolescents have been recruited and determined to be eligible to participate in the program. Training has taken place in the clinics for 34 physicians, nurses and child life specialists to date. At this time, 30 subjects with a diagnosis of Type-1 Diabetes have completed Module 1. It is anticipated that the additional subjects will begin Module 1 during their next scheduled appointments in the clinic, and that additional subjects will begin the Module 1 for sickle cell disease and asthma in the near future. Due to the preliminary nature of the study, program effectiveness with regards to the outcome variables can not be presented at this time.

From preliminary reports of subject and parent satisfaction with the program, the reports indicate great acceptance. Clinic personnel have also enthusiastically accepted the project, noting that it is readily implemented within the framework of the clinics and inpatient units.

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Summary and Conclusions

Currently, MAPP is the only multimedia program available to youths with chronic illnesses in the 9-14 age group that focuses on pregnancy prevention through an abstinence based approach. Another unique feature of the program is the focus on communication with parents and healthcare providers regarding questions and concerns about subject's illness, its effects on their sexual development and future pregnancy and pregnancy prevention issues. MAPP is unique in its use of an interactive approach to promoting knowledge, attitude and intention change around sexual abstinence.

The experiences and preliminary results from development and the early implementation of the MAPP program demonstrate:

1. Importance of involving youth in the planning and advisory process. Youths (aged 9-17) diagnosed with chronic illness provided valuable information to the scripts, graphics and animations used to convey the messages for the 3 modules. In order to ensure that language was appropriate to the ages of the youths, and that messages were conveyed clearly, it was necessary to hold focus groups and to pilot test the modules with the youths input.
2. Using equipment that is portable and secure in the clinic setting. The laptop computers needed to be transported from clinic to clinic in order to serve both inpatients and outpatients. Installing computers in busy clinics, with interruptions to the subjects and the project staff requires that locks and security devices be placed on the equipment.
3. Designing ways of ensuring confidentiality in data collection and in use of the program within the clinic setting. Placing only subject ID codes on the computerized program and on all forms helps to assure the youths that their responses are confidential.
4. Training clinic staff and physicians in the use of the program and how it can benefit provider/patient relationships. It is anticipated that the communication and questioning about illness, sexual development and pregnancy from youths will increase as a result of being in this program. Training clinic personnel in the information and the messages that are transmitted in each of the modules can help to facilitate communication for both the youths and their health providers.

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